

Claims

We claim:

- 5 1. A network verification tool (NVT) apparatus, comprising:
- a network under test;
 - at least one probe network device coupled to the network under test, the at least one probe network device hosting at least one task type; and
 - an NVT server coupled to the at least one probe network device,
- 10 wherein
- the NVT apparatus allows a user to create at least one task for the at least one task type by entering parameters into a template for each of the at least one task,
 - the NVT server is capable of transmitting the at least one task to the at least one probe network device hosting the task type, and
 - 15 the at least one probe network device is capable of executing a process corresponding to the at least one task.
- 20 2. The apparatus of claim 1, wherein the user is coupled through an Internet connection to the NVT server.
- 25 3. The apparatus of claim 1, wherein the NVT server is coupled through an Ethernet control network and a communication server to the at least one probe network device.
- 30 4. The apparatus of claim 1, wherein the at least one task type includes at least one of a traffic generator, a traffic analyzer, a large network emulator, a session emulator, a device query or a script task type.
- 35 5. The apparatus of claim 4, wherein the traffic generator is compatible with at least one combination of a protocol, a media and an encapsulation, wherein
- the protocol is selected from the group consisting of IP, IPX, CLNS, Decnet, XNS, AppleTalk, VINES, TCP, UDP, ICMP, and IGMP;
 - the media is selected from the group consisting of Ethernet, FDDI, Serial and Token Ring; and

the encapsulation is selected from the group consisting of ARPA, SNAP, SAP, Novell-Ether and HDLC.

- 5 6. The apparatus of Claim 4, wherein the session emulator task type is selected from the group consisting of a multi-protocol session emulator, a LLC2 single protocol session emulator, and a SDLC single protocol session emulator.
- 10 7. The apparatus of Claim 4, wherein the large network emulator task type is selected from the group consisting of a BGP large network emulator, a EIGRP large network emulator, an IP RIP large network emulator, an IPX RIP large network emulator and an OSPF large network emulator.
- 15 8. The apparatus of Claim 4, wherein the device query task type is selected from the group consisting of a query CPU, a query memory, a query IP route, a query BGP task, a query EIGRP task, a query OSPF task, a query multi-protocol session task, a query LLC2 single-protocol session task, a query SDLC single-protocol session task, and a query traffic analyzer task.
- 20 9. A method of testing a network, comprising:
 - providing a test network having at least one probe network device coupled to a network under test, the at least one probe network device hosting at least one task type;
 - providing a NVT server coupled to the at least one probe network device;
 - 25 specifying at least one task by entering the parameters for the at least one task into a template for the at least one task;
 - converting the at least one task for transmission to the at least one probe network device;
 - 30 transferring the at least one task to the at least one probe network device;
 - executing the task type associated with the at least one task on the at least one probe network device in order to form a process;
 - monitoring the test network in order to determine performance.
- 35 10. The method of Claim 9, wherein specifying at least one task includes coupling an NVT client to the NVT server,

transmitting a collection of templates corresponding to the at least one task type to the NVT client,

entering parameters into at least one of the collection of templates to form at least one task, and

5 transmitting the at least one task to the NVT server.

11. The apparatus of claim 9, wherein the at least one task type includes at least one of a traffic generator, a traffic analyzer, a large network emulator, a session emulator, a device query or a script task type.

10 12. The apparatus of claim 11, wherein the traffic generator is compatible with at least one combination of a protocol, a media and an encapsulation, wherein the protocol is selected from the group consisting of IP, IPX, CLNS, Decnet, XNS, AppleTalk, VINES, TCP, UDP, ICMP, and IGMP; the media is selected from the group consisting of Ethernet, FDDI,
15 Serial and Token Ring; and the encapsulation is selected from the group consisting of ARPA, SNAP, SAP, Novell-Ether and HDLC.

13. The apparatus of Claim 11, wherein the session emulator task type is selected
20 from the group consisting of a multi-protocol session emulator, a LLC2 single protocol session emulator, and a SDLC single protocol session emulator.

14. The apparatus of Claim 11, wherein the large network emulator task type is selected from the group consisting of a BGP large network emulator, a EIGRP
25 large network emulator, an IP RIP large network emulator, an IPX RIP large network emulator and an OSPF large network emulator.

15. The apparatus of Claim 11, wherein the device query task type is selected from the group consisting of a query CPU, a query memory, a query IP route, a query
30 BGP task, a query EIGRP task, a query OSPF task, a query multi-protocol session task, a query LLC2 single-protocol session task, a query SDLC single-protocol session task, and a query traffic analyzer task.

16. The method of Claim 11, wherein the NVT client and the NVT server are
35 coupled through the Internet and the collection of templates and the at least one task are transmitted using JAVA/HTML processes.

17. A network testing method performed on a test network having at least one network device coupled to an NVT server, the method comprising:
- 5 forming at least one task, the at least one task being formed by
 entering task parameters into a task template;
 interpreting the task parameters to form task code that can be
 transmitted to one of the at least one probe network devices that hosts the
 task.
- 10 18. The method of Claim 17, wherein the at least one task is selected from a group
 of tasks consisting of a traffic generator, a traffic analyzer, a large network
 emulator, a session emulator, a device query or a script task.
- 15 19. A network verification test apparatus, comprising computer instructions
 implemented on an NVT server for
 sending task templates to a user;
 receiving tasks formed by the user entering parameters into the task
 templates;
 translating the tasks to task code;
20 transmitting the task code to probe network devices.
- 25 20. The apparatus of Claim 19, wherein the task templates correspond to task
 types, the task types chosen from a group consisting of a traffic generator, a traffic
 analyzer, a large network emulator, a session emulator, a device query or a script
 task.